

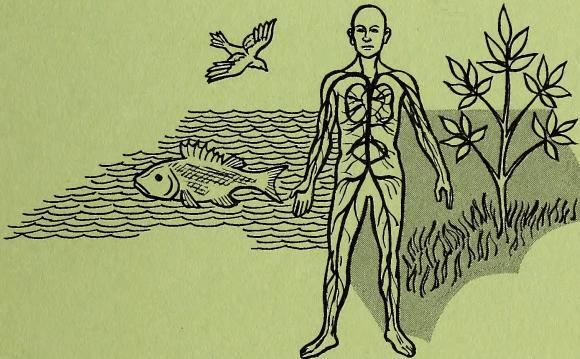
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NORTH CAROLINA'S WORK IN ENVIRONMENTAL PROTECTION

JUL 20 1976



By
GOVERNOR ROBERT W. SCOTT

Presented Before
Carolina Symposium 1970: "Man and Environment"
Chapel Hill, North Carolina
March 17, 1970

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TABLE OF CONTENTS

	Page
Introduction	3
Coastal Zone Legislation	4
Marine Science Council	5
Research and Education Facilities Involved in Oceanology	7
Department of Conservation and Development	7
Department of Water and Air Resources	9
Wildlife Resources Commission	11
Utilities Commission	12
Department of Administration	13
Board of Health	16
Department of Agriculture	19
Pesticide Safe-use Education	19
Soil and Water Conservation Committee	20
Highway Commission	22
Governor's Committee on Economics and Environment	24
Task Force on Environment and Natural Resources	25
Governor's Beautification Committee	26
Consolidated University of North Carolina	27
Reorganization of State Government	31
Conclusion	32



GOVERNOR ROBERT W. SCOTT

INTRODUCTION

This is the first time, to my knowledge, that an attempt has been made to put together an account of the many programs and agencies in the State that are involved in environmental work.

It was past time for this to be done, I thought, so I decided to compile a report on what some of the agencies, and departments, and educators in State Government are doing in the way of environmental protection.

You gave me a big assignment. But I am glad you did, because it enables me to tell you and the other citizens of North Carolina the highlights of our work.

We read and hear a lot about the environment these days.

The subject of environment, broadly speaking, includes inadequate and substandard housing, underfed and improperly fed children, the misuse of drugs and narcotics, and many other things.

Most of the current discussion about environment pertains to the physical environment.

This, too, is a subject that is as broad as it is long, for our

physical environment includes beer cans, and paper, and other litter along our roadsides, the noxious fumes emitted by the cars and trucks we drive, the black, grimy soot and smog that smokestacks belch out into our air.

Our physical environment also includes loud, ear-piercing noises, and raw, untreated sewage, and brown lung disease, and oil slicks, and polluted streams that are void of fish life, and strip mining, and siltation, and salt water intrusion, and junk cars, and persistent pesticides.

We speak of the need for 'law and order' on our streets, in our slums, and on our campuses.

However urgent this need may be, it is trivial in comparison with man's needs for 'law and order' in his environment.

In the process of creating for himself unprecedented affluence, modern man has succeeded in degrading his environment at a frightening pace, frightening in that by its destruction, he could destroy himself, along with less fortunate representatives of the animal kingdom.

And, of course, the question at hand is, "What is being done in North Carolina to hold the environmental problems we have to an absolute minimum?"

This report attempts to answer that question.

COASTAL ZONE LEGISLATION

The North Carolina coast forms the third largest estuarine area of the 48 contiguous states: about 2.2 million acres of coastal marshes, sounds, bays, islands and river mouths.

For many years, our coast was looked upon largely as a barren wasteland, as more of a barrier than a resource.

Now we know that our tide-washed marshlands, with a production rate 10 times that of dry land, comprise the most productive environment in nature.

To establish order in our coastal zone, the 1969 General Assembly passed a law requiring a permit before any dredge or fill project is undertaken in any estuarine waters, tidelands, marshlands, or State-owned lakes. Dredging equipment must be registered, and this equipment is checked weekly by aerial surveillance.

This law does not deny landowners the use of their properties. Rather, it protects the public interest and welfare.

The legislators enacted a bill setting up a 'capacity water use' in our coastal zone. This requires industries and municipalities whose ground or surface water usage exceeds 100,000 gallons of water a day to obtain a permit from the State. This legislation provides protection for the aquifer and helps ensure adequate supplies of water for other uses.

An estuarine beautification bill provides for the regulation of such acts as erecting signs and other structures and disposing of trash, acts which tend to mar the beauty of our navigable waters.

A fourth act established a Seashore Advisory Board to assist in the recreational and industrial development of our sea coast.

The 1969 General Assembly also directed that a comprehensive estuarine study be made. This study, which is to be ready for presentation to the 1973 General Assembly, will result in a comprehensive coastal zone use plan for North Carolina.

Under this plan, our coastline will be divided into five 'use' categories. One category will be 100 per cent for industrial and other development. The second category will allow 70 per cent development and restrict 30 per cent to preservation.

The third category will be 50-50; the fourth category, 30 per cent for development and 70 per cent for preservation. The fifth category will be 100 per cent for preservation, and no development will be permitted.

The 1969 General Assembly recognized that the future of our commercial fishing industry depends upon protecting a chain of life which begins in our priceless estuaries and coastal marshlands.

Accordingly, the legislators appropriated \$500,000 to finance the acquisition of marshlands by the State.

Since the legislature adjourned, a property owner in Brunswick County has offered 800 acres of estuarine lands to the State. A title search is now under way, and if all legal questions are resolved, this will be the first project in the State's effort to buy, and thus, protect forever, these valuable estuarine lands which are the breeding grounds for much of our marine life.

MARINE SCIENCE COUNCIL

The 1969 General Assembly also established the North

Carolina Marine Science Council on a permanent basis with an appropriation of \$1.8 million.

The objective of this council is to bring about comprehensive development of all marine resources in North Carolina with careful consideration and attention to conservation and preservation.

This council is composed of persons who can speak for all the major interests in the coastal area, such as commercial fishing, mineral recovery and tourism. There are others on the council who have no specific interest, yet they can relate to the overall situation.

It is my hope that the Marine Science Council can help in bringing order out of chaos in the marine resources field in North Carolina. We have attempted to organize it so that it promotes communication between scientists and persons involved directly in marine industries and action agencies.

We have attempted to create an organization that can look at the total picture and not just at one segment of it. The formation of this council recognizes that all interests can and must be served, and that by working together, the great potentials represented by the ocean and coastal zone can be realized.

I commend the council for the way it has performed in this past year. It has, in this short period of time, developed the basic components of a long-range plan for the full development of our marine resources.

This plan is founded on a sound research base. It sets forth long-range objectives and specific target areas for concentrated effort. It includes institutional commitments to work on the problems relating to these areas. Some additional work needs to be done on the plan before it will be ready for general distribution.

To implement such a plan, it was recognized that considerable resources from both the State and Federal governments would be necessary.

Concurrent with the long-range planning, therefore, a proposal was prepared to be submitted to the Office of Sea Grants in Washington. This research and educational proposal, which involves over \$1 million and includes four universities during the first year, was submitted January 31. We expect a favorable response.

RESEARCH AND EDUCATIONAL FACILITIES INVOLVED IN OCEANOLOGY

In the Beaufort-Morehead City area, the Federal Government has a radiological laboratory, and also a biological laboratory.

The Duke University Marine Laboratory at Beaufort has become a national center for oceanographic research and training. Duke's cooperative program in biological oceanography, in operation since 1963, has attracted scientists from more than 25 colleges and universities. This program, which is co-sponsored by the National Science Foundation, includes the research ship, *Eastward*, a 117-foot vessel capable of voyages on the high seas.

Also in the Beaufort-Morehead City area, the Consolidated University of North Carolina has its Institute of Marine Sciences. It has a 48-foot research vessel. Adjacent is the laboratory of the State's Division of Commercial and Sports Fisheries. It has a 70-foot exploratory fishing ship.

In the Wilmington-Wrightsville Beach area, there is a biomedical laboratory, which enables North Carolina's three medical schools to conduct research on the physiology of deep-sea diving. There, the International Nickel Company has a marine laboratory, and the Office of Saline Water has a pilot desalination plant.

The Wilmington campus of the Consolidated University is expanding its teaching program in marine science and marine resource development. The Cape Fear Technical Institute has an advanced program of training marine technicians. Its 185-foot research vessel participated in the international BOMEX project last year.

In addition, we are planning to set up a Marine Resources Service Center at Wilmington.

Elsewhere on our coast, North Carolina State University has a fisheries laboratory at Hatteras and a marine laboratory next to the Pamlico Sound. At Manteo, East Carolina University is developing a marine science facility.

DEPARTMENT OF CONSERVATION AND DEVELOPMENT

The Commercial and Sports Fisheries Division in our Depart-

ment of Conservation and Development is the agency in State Government responsible for much of the work being done to manage and protect our marine resources.

This division has an on-going program of research affecting oysters, shrimp, scallops and finfish. It is also working on a lobster program.

The fisheries division is also conducting the comprehensive estuarine study and is responsible for the purchase of marshlands.

In addition to the Commercial and Sports Fisheries Division, there are three other divisions in the Department of Conservation and Development with major responsibilities in the area of conservation.

These are the divisions of Forestry, Parks and Mineral Resources.

The North Carolina Forest Service protects and develops our forestry resources through several basic programs in three broad areas: forest protection from fire, insects and diseases; forest management assistance to landowners; and the development of new forests through site conversion and reforestation.

At a recent meeting of the C & D Board, a resolution was adopted instructing the Forest Service to expand its program to include efforts for the establishment of small public forest areas for recreational purposes.

The board instructed the Forest Service to take the appropriate steps to secure funding for this program and to initiate this program on lands now under its control and upon lands acquired for this purpose.

In 1969, our Forest Service, through its management program, assisted 5,553 individual landowners involving 170,929 acres of woodland.

This year, it is estimated that private landowners will purchase more than 50 million seedlings from the State's five tree nurseries.

The State's Parks system includes 16 parks for outdoor recreation. These 16 parks include more than 54,000 acres of land and nearly 30,000 acres of water. These properties will be protected forever.

A six-year program for further development and expansion of our parks has been adopted by the C & D Board for presentation to the 1971 General Assembly.

Of particular interest in the work of the Mineral Resources division is its close ties with the North Carolina Mining Council.

The Mining Registration Act of 1969 requires that all mining operations in the State be registered by the thirty-first of this month. This registration is the responsibility of our state mining engineer.

But the most important aspect of the Mining Registration Act was the charge to the Mining Council to prepare, for consideration by the 1971 General Assembly, legislation under which mining operations in the State shall be regulated.

Important areas to be considered here are: designating or creating a State agency to administer the mining law; specifying the legal responsibility for reclaiming mined-out lands; and creating a system of licensing, or some other acceptable procedure, to ensure that adequate conservation and land reclamation measures are implemented by mining operations.

DEPARTMENT OF WATER AND AIR RESOURCES

The Department of Water and Air Resources is the agency in State Government responsible for enforcing our water and air pollution control programs.

The State's first standards and regulations for air quality control have been developed and are expected to become effective on July 1.

These regulations and standards will control open burning, the emission of dark smoke, and the discharge of sulfur oxides and particulate matter.

Enforcement provisions of our air pollution control law do not become effective until after the air quality standards have been adopted.

However, voluntary actions by industries and by one municipality, Greensboro, have resulted in the issuance of 32 certificates of approval for air-cleaning devices to cost about \$22 million.

The 1969 General Assembly enacted legislation to clarify and strengthen the authority of local and regional air pollution control programs to protect human health and plant and animal life. Nine local programs covering 14 counties are now in operation.

Increased appropriations have made possible an acceleration

of our observation-well program of providing guidance on the conservation and proper use of our ground water resources, which serve more than half of the people of North Carolina.

Our water pollution control program has been advancing recently at a rapid pace.

During 1969, industries and municipalities committed \$42,821,792 for 186 water pollution abatement and control projects. This was the largest amount ever committed for building treatment facilities in North Carolina in a single year.

Since our water pollution control program began, 1,815 permits have been issued for projects costing an estimated \$321,772,134.

According to officials of the Department of Water and Air Resources, more than 90 percent of the waste load discharge to surface waters of North Carolina receives adequate treatment.

The Department of Water and Air Resources is working with those responsible for the remaining wastes to establish time schedules leading to the adequate treatment of these wastes.

Our program of monitoring streams to check on the effectiveness of waste water treatment facilities has been expanded in recent months with additional funds allotted by the 1969 General Assembly.

The legislature's enactment of a law requiring the examination and certification of treatment plant operators gives us another valuable tool in conducting a comprehensive anti-pollution program.

Action is under way at this time for further improvement of this program.

Also under way is the development of stronger water quality standards and the adoption of a policy to protect streams against any lowering of existing quality.

An over-all review of the use classifications now assigned to streams is being planned, with the purpose of upgrading the waters of our State.

The higher classifications would be aimed at more closely reflecting current uses of streams and the needs of the State.

Major legislation approved by the 1969 General Assembly clarifies the authority of the State, and of local governments, to meet Federal requirements of cooperation in water resources development, such as river and harbor, flood control, beach erosion and hurricane protection projects.

All told, 169 water resources development projects are in the mill in North Carolina.

These range from small flood control projects to large multi-purpose projects that provide for water supply, augmented stream flows, recreation and flood control.

Also included are projects to protect our coastline from the destructive forces of hurricanes and heavy rains, and measures to improve inlets and channels for safer navigation for shipping, commercial fishing, and recreation.

The Legislative Research Commission and the Department of Water and Air Resources are examining the possible need to recommend changes in our laws on water and air quality.

A number of matters are under study.

For example:

The matter of effective State purification in the development of regional water supplies and regional sewer systems;

The legal framework for the delivery of water stored in Federal reservoirs at the expense of local governments; and,

The possibility of the State providing financial assistance to local and regional governmental units for water supply projects, sewer systems, water pollution control facilities, and air pollution control programs.

Another problem being considered is how sediment pollution resulting from urban construction might best be controlled.

The Department of Water and Air Resources and the Department of Community Colleges provide instruction for janitors and furnace men in how to stoke and fire furnaces properly so that there will be a maximum of heat and a minimum of smoke. If a furnace is not fired properly, there will be insufficient heat for combustion, less heat produced, and more smoke and gasses emitted.

WILDLIFE RESOURCES COMMISSION

The Wildlife Resources Commission, since it was established in 1947, has worked to maintain at least the minimum of environmental quality required for the well-being of fish and wildlife.

Twenty years ago, the commission actively assisted the Stream Sanitation Committee in assigning minimum sanitary standards to every stream and body of water in the State.

Fifteen years ago, the commission successfully championed the fight to keep the quality of the Roanoke River at a level to support successful spawning of the largest single population of striped bass to be found in the eastern United States.

Now, the commission is actively engaged in determining the full impact upon fish life resulting from the discharge of heated condenser water from a million-kilowatt fossil-fuel steam plant.

The Commission also cooperates with the Federal Government and other State agencies in appraising potential effects upon the aquatic environment from thermal pollution by proposed steam plants.

By observing and reporting fish kills, the Wildlife Resources Commission actively assists the Department of Water and Air Resources in monitoring the quality of the State's public waters.

The commission's staff of wildlife protectors comprise the early warning system of the State to alert water authorities that a damaging waste spillage has occurred, a spillage with inevitable ecological and environmental disruptions.

For many years, the commission has pursued an extensive program of habitat restoration and improvement for waterfowl and upland game, as well as for fish.

One example is the commission's success in getting the U. S. Army Corps of Engineers to operate the Cape Fear River navigation locks during April and May, solely for the annual migrations of the American shad to their ancestral spawning grounds.

By this procedure, a substantial sports fishery for shad has been developed upstream, along with a three-fold increase in the take by the commercial fishermen in the river below.

UTILITIES COMMISSION

In respect to thermal pollution, I am pleased to report to you that the Utilities Commission is also taking a critical look at this problem.

Last week, representative of Duke Power and Carolina Power and Light appeared before the Utilities Commission, in an informal session, to advise the commission of what they have done and are doing in the way of environmental protection.

A member of my staff sat in on this session, and he told me that he was impressed with what these two public utilities have

done to control mosquitoes around lakes, to check their lakes for impurities, to manage their timberlands scientifically, to make their lakes available for recreation, to upgrade their old steam plants by installing new electrostatic precipitators and dust collectors and using low sulphur coal and thus, reducing the vapor and fly ash from these plants.

These utility companies have done a lot in the way of beautification, by landscaping their substations and by beginning to put some of their lines underground.

Duke Power and Carolina Power and Light presented data showing that fish tend to thrive in heated waters. They claim that the term should be "thermal enrichment" instead of "thermal pollution." Nevertheless, they are conducting studies on the effects of heated water on fish, and State agencies are keeping a close watch on the discharge of waste heat in bodies of water.

DEPARTMENT OF ADMINISTRATION

Two months ago, I asked the Department of Administration to take stock of the extent to which State Government is contributing to the pollution of our environment. We cannot ask private industry to correct its pollution problems, and at the same time turn our heads on our own shortcomings.

At the present time, a comprehensive summary of data compiled by the Department of Water and Air Resources and the State Board of Health is being prepared on the extent of air, water and landscape pollution caused by State Government in North Carolina.

Preliminary reports from the committee compiling this data indicate that State Government is doing a fairly good job of controlling its pollution problems. In many cases, steps were actually under way before our study began to correct existing problems. In other cases, steps will be taken immediately to strengthen deficiencies. There are no cases of serious pollution of the air, water or landscape by State Government which have not been identified or which are not in the process of being corrected. We will continue to monitor potential sources of pollution in State Government to insure that no new problems develop.

Next, we will begin to detect and compile data on all sources of pollution in our environment. We have laws that define standards of clean water, clean air and sanitation. These laws will be vigorously enforced. Time and experience may show a need for additional controls. However, in every case, offenders will be given an opportunity to correct voluntarily any problems which exist.

More time and more money will be necessary to correct some of the existing pollution problems in State Government.

We know these problems, and they must be corrected. I will ask the next session of the General Assembly to appropriate the funds necessary to step up this work.

In the meantime, we can complete our studies, make cost estimates, and determine the best methods of correction.

I think that we might well re-examine our plans for future buildings, such as dormitories, hospitals and office buildings, to make sure that heating plants and waste disposal systems are properly designed so as to minimize pollution.

What are some of the pollution problems in State Government?

Here are some examples.

The waste water treatment plant at Western Carolina University is overloaded. Plans are now being prepared to replace it with a newer and larger facility.

At 11 of our Department of Correction's prison units, stream pollution is occurring because of inadequate or overloaded treatment facilities. At four other units, improper operation of adequate facilities creates pollution problems.

Sewage from toilet facilities on State-owned ferry boats is discharged overboard without treatment, as it is on most other State-owned boats. These problems can and will be corrected.

At Wilmington, raw sewage from a State-owned office building is discharged into the Cape Fear River. Plans are now being prepared for a treatment unit to serve this building.

All fuel burned to heat State-owned buildings, as well as for the entire school system, is purchased on contract by the State. At the present time, the sulfur content on coal averages about one percent. On fuel oils, the sulfur content is higher, about 2.5 percent. We plan to purchase in the future coal and fuel oil with lower sulfur contents so that combustion will not produce harmful sulfur dioxide gasses. This procedure can be accomplished administratively.

The smokestack at the Central Heating Plant in Raleigh is in for a big improvement. We are converting this facility to a gas-fired boiler, with fuel oil as a standby. As a matter of fact, the new boiler has been purchased and will be installed shortly.

One source of pollution here in Chapel Hill is the smokestack at the Central Heating Plant, which emits black particulate matter.

This is a coal-fired boiler, and it happens to be one of the largest such boilers owned by the State. To replace it will cost between \$600,000 and \$800,000. Hopefully, we will be able to find the funds to replace this boiler with one that uses either petroleum or natural gas.

The Planning Division in the Department of Administration is involved in a number of programs which affect the environment.

Today, the Planning Division mailed an application to the U. S. Department of Housing and Urban Development asking for comprehensive planning funds in the amount of \$120,000. If this application is approved, the State will provide an additional \$60,000 in planning funds.

Included in this proposal is a study of environmental problems. The purpose of this study is to develop a State-wide framework, or system, to insure the coordination, communication and data exchange needed to solve these problems.

The objectives of such a system would be to provide a means for determining and analyzing the consequences of contemplated changes or developments, for evaluating the expected results with regard to the long-range interests of all citizens, and for seeking modifications or alternatives to planned activities that maximize the benefits and minimize the undesirable effects.

Also in the Department of Administration is the Office of Comprehensive Health Planning. This office has coordinated the work of the Task Force on Environmental Health since this task force was established in October, 1968.

This task force, made up of 25 dedicated citizens, recently completed a year-long review of environmental health services and problems in North Carolina.

The task force has submitted its report of 34 specific recommendations to the State Advisory Council on Comprehensive Health Planning.

These recommendations cover a number of topics, such as population stabilization, disposal of hazardous wastes, education

about vector dangers, water, sewage, solid wastes, air pollution, housing, occupational environment, and radiation.

BOARD OF HEALTH

Another agency involved in environmental protection is the State Board of Health.

The solid waste and vector control section of the Board of Health is responsible for the State's solid waste disposal program.

A recent survey showed that each person in the State produces one ton of solid wastes each year.

The State Board of Health is now preparing a Statewide plan for disposal of solid wastes in adequate disposal facilities, instead of in the prevalent open dumps.

This agency is also providing technical assistance to cities, counties and industries that are in the midst of planning for more effective disposal facilities.

There are about 1,700 public water supplies in North Carolina that serve about 60 percent of the population.

It is the legal responsibility of the sanitary engineering division of the State Board of Health to ensure that each of these water systems furnishes water that is healthful and safe for human consumption.

About 150 of these public water supplies use water from streams. Through a cooperative program with the Department of Water and Air Resources, efforts are continuously being made to ensure that these streams are safe sources of raw water for a surface water treatment plant.

The remaining 1,550, or so, water supplies use water from wells. The sanitary engineering division has developed standards for protecting these wells to ensure that they produce water safe for human consumption. These methods of protecting wells also eliminate pollution entering the ground water bearing stratum, and thus, prevent ground water pollution.

The sanitary engineering division is required by law, through approved design, approved construction and constant surveillance, to control stream pollution at the following types of institutions with on-the-site treatment plants:

1. State institutions
2. Public schools
3. Nursing homes and rest homes

4. Hotels, motels and restaurants
5. State-owned and operated roadside rest areas
6. State parks and recreational areas
7. Shellfish processing plants, and
8. Farm abattoirs

It is required by law that all of the boats operating on our State's inland waters which have toilets be equipped with an approved sewage treatment device or sewage holding tank so as not to pollute the waters.

The sanitary engineering division has the responsibility of approving these devices, and the Wildlife Resources Commission has the responsibility of seeing that boats have these devices and that they are being used.

The State Board of Health's shellfish sanitation program consists of effective sanitary control of production, harvesting and marketing.

Shellfish are certified for interstate and intrastate shipment upon compliance with State and Federal standards, as determined by sanitary and bacteriological examination and classification of shellfish growing waters, inspection of shucking and packing establishments, and laboratory examination of finished products in market containers.

About 1.4 million acres of actual and potential shellfish growing waters are under surveillance. And, I regret to inform you, about 45,000 acres are closed to shellfishing because of pollution.

Since 1964, the State Board of Health has participated actively in the work of the ad hoc inter-agency committee established to eliminate and prevent pesticide residues in the State's milk supply. Others represented on this committee include the Agricultural Extension Service, the dairy division of the Department of Agriculture, the county health departments, and the North Carolina Dairy Products Association.

The radiological health section of the Board of Health performs routine environmental surveillance of air, food, water, and milk for radioactive contamination to make sure that radioactive concentrations do not exceed State regulations.

The four nuclear power reactors to be built in the State will also be checked for radioactive concentrations.

Nutritionists from the Community Health Division of the Board of Health began a comprehensive Statewide nutrition

survey in January to determine the extent of malnutrition in North Carolina.

North Carolina is the first state in the nation to undertake an extensive nutrition survey on its own.

About 15 nutrition staff members are working on the survey. About 2,000 families from all economic categories—both rural and urban—are being selected at random across the State. The selection of households will be made by the Public Health Statistics Section of the State Board of Health and the Division of Statistics of the Research Triangle Institute.

The main objectives of the survey will be to determine the percentage of the State's population with adequate and inadequate diets and factors which influence diets—such as economic status and nutrition knowledge. Using laboratory determinations, the surveyors will carefully probe for nutritionally-related anemia and growth retardation among pre-school children.

Findings of the survey will be made available to guide interested groups in strengthening existing services, as well as developing new action programs for the purpose of stabilizing the hunger problem in North Carolina.

The pesticides program of the Division of Epidemiology is concerned directly with the human health aspects of pesticide usage in North Carolina.

Accidental poisoning, household use, agricultural use and high-risk occupational exposure groups are all of immediate concern to the pesticides program activities. Beyond this, we are deeply interested in the over-all effect these pesticidal chemicals are having on man and his environment.

A county-wide rural survey has been conducted in Johnston County. The purpose of this study was to determine the types and amounts of pesticidal material used throughout the 1969 agricultural year. Also included in the survey were the method of application and by whom the pesticide was applied as well as how these materials were handled before, during, and after actual application and use.

This basic information will give further insight into identifying health-related problems associated with pesticides.

Air monitoring and human tissue monitoring activities were started in 1969. Two air monitoring stations were set up in Johnston County. They were located atop the Johnston County Health Department in Smithfield and atop the Meadow Volunteer

Fire Department at Peacock's Crossroads in Meadow Township.

These two air monitoring stations will be operated again during 1970. Human tissue for pesticide content analysis are currently being collected from three hospitals in North Carolina. These locations are: Duke University Medical Center, Durham; North Carolina Memorial Hospital, Chapel Hill; and Wake County Memorial Hospital, Raleigh.

A laboratory has been established at the State Board of Health which now has the analytical capability to assess the pesticide content of water, tissue, food and other products that may be associated with human exposure.

A survey of well water will be conducted in selected areas of Johnston County during the 1970 agricultural season, and the analysis will be made in the Board of Health's laboratory.

To date, educational activities have been directed toward health professionals, including physicians and county health department personnel. A training course in pesticides and public health is currently being planned for State Board of Health and county health department personnel; however, we are planning to invite interested personnel from other State agencies to attend this training course.

DEPARTMENT OF AGRICULTURE

The Department of Agriculture, during the past year, has taken definitive action to hold back the pollution caused by pesticides. This was done by refusing to register for use the labels on harmful products, for which there are safer products.

Many question whether this is going far enough. But, to do more will require legislation. And this is under study.

The Agriculture Department's meat and poultry inspectors are constantly on the outlook for plants which contaminate lands and streams with sewage. Any evidence of such pollution is promptly reported to the Department of Water and Air Resources.

PESTICIDE SAFE-USE EDUCATION

Pesticide safe-use education in North Carolina is the responsibility of the Cooperative Extension Service at North Carolina State University.

To fulfill this responsibility, the Cooperative Extension Service in 1965 designated a pesticide coordinator and a pesticide education team to initiate and carry out a statewide pesticide education program through the efforts of a pesticide coordinator on the extension staff of each county.

At that time, the rapidly expanding use of pesticides, including insecticides, fungicides, herbicides and rodenticides, in agriculture had created a situation in which the misuse of these chemicals could result in serious harm to man, crops, livestock, wildlife and the environment.

Throughout, the goal of this pesticide education program has been to develop within the general public an awareness of the problems relating to pesticides, with special emphasis being given to their safe and proper use.

An idea of the magnitude of this program can be gained from the fact that in a recent year the following activities were accomplished in North Carolina: special pesticide safety meetings, 334 (attendance 8,501); general public meetings with safe use as a part of the program, 1,585 (attendance 34,564); special pesticide schools, 27 (attendance 1,594); radio programs, 2,802; television programs, 44; newspaper articles, 1,313; newsletters, 27,651; fairs in which safe-use information was distributed, 49; and pesticide dealer training meetings, 948.

What of the future? Since our expanding population and economy continues to demand ever more efficient production in agriculture, it is apparent that the use of pesticides will be with us for some time to come.

Inherent to the utilization of pesticides is the very human problem of misuse, including such things as use of pesticides in excess of recommended amounts, use in non-recommended situations, and use in an indiscriminant manner.

Not only are all of these problems still with us in 1970, but they are present in an expanded form. This in turn means that efforts to educate the manufacturer, the distributor, the dealer, the user and the general public in the safe and proper use of pesticides must be expanded.

SOIL AND WATER CONSERVATION COMMITTEE

The enactment in 1937 of the North Carolina Soil and Water

Conservation Districts Law, and the organization of the Brown Creek Soil and Water Conservation District that same year, marked the beginning of an experiment, an experiment to see if local, democratically organized and controlled subdivisions of State Government could and would develop programs which would save our soil and water, two of our greatest natural resources.

This was the second such law passed, and the first such district organized, in America.

Under the provisions of this act, soil and water conservation districts are organized, through the efforts of landowners, to plan and carry out a conservation program which local people need and want.

District affairs are managed by elected representatives, known as district supervisors, who seek the assistance of all individuals and groups in a coordinated conservation program.

The Small Watershed Act was enacted by the 1959 General Assembly.

Its basic aim is to provide enabling machinery whereby local landowners might organize legal subdivisions of the State known as watershed improvement districts to enable them to better fulfill their responsibilities in seeking federal assistance to solve problems of watershed protection and flood prevention.

The Soil Conservation Service of the U. S. Department of Agriculture has a memorandum of understanding with soil and water conservation districts.

This memorandum of understanding relates to assistance and cooperation in developing conservation plans on private lands, assisting with referrals from the Agricultural Conservation Program, watershed projects, Resource Conservation and Development projects, and river basin projects.

At present, there are nearly 68,700 soil and water conservation district cooperators with 8,281,570 acres in North Carolina. Since 1937, 63,813 ponds or irrigation reservoirs have been built in North Carolina with help from the Soil Conservation Service and the soil and water conservation districts.

The following has been accomplished in respect to small watershed projects: applications have been submitted for 88 watersheds; 74 watersheds have been assigned priority for planning; 38 watershed plans have been completed; 22 projects

are now in operation; construction work has been completed on nine projects, and construction is almost complete on nine others.

Thirty-one floodwater retarding structures have been completed. Five-hundred and 25 miles of stream channel improvement and 21 miles of levee have been installed to prevent flooding.

This year, our 100 counties are contributing approximately \$200,000 to pay for clerical and technical help for soil and water conservation districts.

The State this year is providing nearly \$190,000 to support the work of the State Soil and Water Conservation Committee and the soil and water conservation districts.

HIGHWAY COMMISSION

This year the State Highway Commission is spending about \$2 million to keep our highways clean and free of beer cans, paper and other litter. Clean-up crews in the maintenance department are used to help keep the rights-of-way on State roads clean.

The Highway Commission is also well aware of the problem of erosion control, and for many years, it has been establishing grass cover on roadsides.

In addition to the dollars-and-cents value of soil conservation, such erosion control work forms the very foundation of attractive highways.

Continuing efforts are being made by the Highway Commission to improve control of erosion, siltation and pollution. Members of the commission's staff are currently developing methods for more effective controls.

A 100 percent cover of vegetation would be desirable, but there are situations where vegetation cannot be established because the right-of-way is too narrow and slopes are too steep.

As a regular betterment operation, the commission's maintenance forces are progressively improving many roadsides by flattening steep slopes of moderate height from the ditch line to the right-of-way line.

In some cases where property owners are willing, slopes of moderate height are flattened beyond the right-of-way line, and excess material from this work is spread over adjacent property.

In a tourist-oriented state, such as North Carolina, attractive highways with trees and flowering shrubs are important. But highway safety is also important. Striking a proper balance between desirable vegetation and a moderate width of clear roadside is a goal toward which the commission is working.

The use of herbicides in roadside vegetation management is moderate and under the direction of experienced personnel.

Litter cans for the traveling public are located in rest areas and at roadside tables along major highways.

But, they can only serve those who are willing to use them.

The Highway Commission, and the Governor's Beautification Committee, and the Agricultural Extension Service, and all of the other groups involved in keeping North Carolina green and clean need the help of all citizens. Only in this way can we cut down on the unnecessary expenditures of tax dollars to clean up the careless littering of our roadsides.

I would urge law enforcement officers to enforce more vigorously our anti-litter law. In 1968, only 99 persons were arrested for littering in North Carolina. In eight of our counties, no arrests were made.

According to the executive director of the Governor's Beautification Committee, our anti-litter law does not cover litter in parks or beaches or within the city limits of municipalities. Some townships have no anti-litter laws at all. It is possible that a proposed revision in our anti-litter law will be presented to the 1971 General Assembly.

Getting back to the Highway Commission, I am pleased to report to you that more and more emphasis is being placed on social, economic and environmental effects of highways as our commission plans for major locations.

All commission departments involved in the early studies work together to consider these effects.

Included in the environmental phase are the effects of the highway on recreation and park areas; attractiveness of the highway and surrounding properties; conservation; historic landmarks; and water and air pollution that may result from highway construction.

The Highway Commission works closely with sanitary engineers in the Board of Health and with personnel in the Department of Water and Air Resources to ensure that highway rest areas have proper water supplies and sewage disposal facilities.

Certainly, safety is an essential part of a quality environment. During the Christmas holidays, about 2,000 highway department employees worked straight through to battle snow and ice that made traffic hazardous.

In addition, the Highway Commission is, right now, repairing or replacing 22 substandard bridges in North Carolina. It is also identifying hazardous intersections and railway crossings and working to correct these hazards.

GOVERNOR'S ADVISORY COMMITTEE ON ECONOMICS AND ENVIRONMENT

With North Carolina having, on the one hand, undernourished children living in economically deprived conditions, and, on the other hand, having serious environmental problems, it is clear to me that we must have a definite policy to guide our economic development within the framework of a clean and safe environment.

North Carolina needs both a prosperous economy and a quality environment.

Accordingly, I authorized Roy Sowers, Director of our Department of Conservation and Development, to announce the creation of an Advisory Committee on Economics and Environment.

Mr. Sowers did this on February 23 in a speech to a Raleigh civic group.

At that time, he announced the members of the committee from State Government.

They are:

James A. Graham, Commissioner of Agriculture;

Vernon Stevens, Chairman of the Board of Water and Air Resources;

George Pickett, Director of the Department of Water and Air Resources;

Gilliam K. Horton, Chairman of the Board of Conservation and Development;

Jay Waggoner, Chairman of the Wildlife Resources Commission;

Irvin Aldridge, Director of the Department of Local Affairs; and

H. A. (Jack) Smith, Administrative Officer of the State Soil and Water Conservation Committee.

I am, today, pleased to announce the appointment of some additional members to this advisory committee.

They are:

Dr. Howard Thomas Odum, internationally-recognized ecologist in the Departments of Botany, Zoology and Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill;

Professor Robert Soots of the Biology Department at Campbell College, Buies Creek, N. C., and president of the Raven Rock Preservation Park Committee;

Dr. Louise Nelson, associate professor in the Department of Economics at Davidson College;

Thomas H. Jones, a junior at Methodist College in Fayetteville, and President of the Collegiate Academy of the North Carolina Academy of Science;

Miss Sarah Louise Sheffield, a senior majoring in wildlife biology at North Carolina State University;

George P. Johnson, special representative for industry and defense products at Westinghouse Corporation in Raleigh;

Dickson McLean, Jr., attorney in Lumberton;

James Mark Leggett, assistant product manager in the Knitwear Division, Hanes Corporation, Winston-Salem;

Representative Howard Penton of New Hanover County; and State Senator Thomas R. Bryan of Wilkes County. The State Planning Division of the Department of Administration will be represented by Robert R. Wagner, assistant State planning officer.

(Editor's note—In addition, the following persons have also been appointed to the Advisory Committee: Dr. Jacob Koomen, Director of the Board of Health; Hugh Wells, member of North Carolina Utilities Commission; and Dr. James Bearden, Dean of the School of Business, East Carolina University, Greenville.)

TASK FORCE ON ENVIRONMENT AND NATURAL RESOURCES

The 1969 General Assembly authorized the establishment of a Task Force on Environment and Natural Resources in our Department of Public Instruction.

The 42 members of this task force have assembled information on the activities of various State, Federal, and private agencies concerned with environmental control and natural resource areas.

This group is planning what will be one of the first, if not the first, public school curriculum on the environment in the nation.

This task force is examining the need for and formulating recommendations as to what, if any, changes need to be made in the pre-service education of teachers.

Implicit in this approach is the recognition that, unless and until teachers are adequately trained in the environmental sciences, they cannot begin to instruct boys and girls in this subject.

A comprehensive program of environmental education in our public schools should result in a better informed and a more concerned citizenry.

Such informed and concerned citizens should, in turn, work to prevent further damage to man's physical and social environment and insist on the wise use and control of our environment and natural resources.

GOVERNOR'S BEAUTIFICATION COMMITTEE

The Governor's Beautification Committee was created four years ago by executive order of Governor Dan Moore, and the original purpose was to inspire the public with interest in beautification.

Principal activities of the committee have included sponsorship of a Statewide beautification conference in Charlotte in October, 1969, and a seminar on the junked auto problem in Greensboro in January, 1970.

Two awards programs now are under way on a Statewide basis. One is a community awards competition with more than \$5,000 to be spent from private funds for the awards. The other is a Statewide beautification contest in the State's school system, with more than \$1,500 appropriated from private funds for awards to winning schools.

In addition, the staff works closely with 100 county beautification coordinators under the area development program headed by John Crawford at N. C. State University Extension Service. The staff also coordinates its activities with the Department of Water and Air Resources, the State Health Department, and other State agencies concerned with topmost problems today in the field of environmental pollution.

The Beautification Committee has three specific items on its agenda of priorities: working on legislation to improve the State's anti-litter law, working on legislation to improve our regulations on junk cars, and planning for a Statewide clean-up program.

CONSOLIDATED UNIVERSITY OF NORTH CAROLINA

Whatever your view on the future of our environment, whether it is that "Doomsday" is here or that we can somehow "baffle-it-out" by business as usual, one thing is certain: We must have better information. We must have greater knowledge of the behavior and fate of specific toxicants, contaminants and pollutants. We must have a better understanding of the interaction of these in micro and in macro environments.

Gains in any of these require men and women who are imaginative and sensitive, educated and skilled in specific technologies. The preparation of such people is the enduring purpose of our universities.

In the last six months there have already been three significant reports from Federal sources calling for definitions and methods by which the universities of our country can become effectively engaged with the requirements for environmental quality.

As chairman of the Board of Trustees of the Consolidated University of North Carolina, I share in your pride in reporting to you that we have not waited until this year of apparent crisis to start teaching and research on environmental quality.

In fact, we began 50 years ago when courses in sanitary engineering were offered on this campus for the preparation of municipal and civil engineers. The man involved in that activity, a UNC graduate, was the first person ever to receive a doctoral degree in the United States in the speciality of sanitary engineering. After serving the University for over 30 years he became the first director of the environmental health group of the World Health Organization.

Nor is it coincidental that the current director of environmental health in the World Health Organization is also a graduate of this University.

While history such as this may give comfort to us all, the

more significant facts are that at this moment, on the campuses of Chapel Hill and Raleigh, almost 200 students are involved in programs in environmental health made possible mainly by the UNC Institute for Environmental Health Studies, one of the first university endeavors of this type in the U. S. and now in its fifth year. Sixty-five of those students are fellows in the Institute receiving full financial support of tuition, fees and stipends.

Study and research in the environment have long made use of the joint capabilities of UNC-CH and NCSU. Beginning with joint programs in radiation, the Institute for Environmental Health Studies now has brought together the power and skill of faculty from 11 departments of the two campuses of the Consolidated University.

In the five years of its existence, more than 300 graduate students have received direct financial support from the Federal grant which makes the Institute for Environmental Studies viable.

The chain reaction of such programs of study is marked by the fact that an additional 500 graduate students have undertaken programs of study made possible by the Institute and the devoted cooperative work of the faculty of the participating departments on both campuses.

There are other mechanisms through which the University has been engaged in crucial issues of environmental quality vital to North Carolina municipalities, and the nation. The Southern Water Resources and Pollution Control Conference will hold its 19th annual session on the campus of Duke University just one month from now.

As it has for 19 years, the conference will bring together leaders from throughout the country, the region, and our State to wrestle with the very difficult issues of determining the maximum beneficial use of our water resources and the most effective and economic means of preventing and controlling pollution.

From its inception, this meeting has been the joint effort of the faculty of three universities—Duke, North Carolina State, and Chapel Hill—with the actual site of the meeting rotating each year among the three campuses.

The most recent product of triangling among the same three institutions and indeed to some extent among the same faculty group is the "Triangle Universities Consortium on Air Pollution".

This had its official birth with an appropriate signing of articles of agreement on January 5, 1970.

Its first tangible product is the course, "Air Pollution Meteorology," which began this semester with student and faculty participation from the three institutions.

A third Consolidated University undertaking is the Water Resources Research Institute. Its purpose is the direct engagement of faculty and advanced graduate students in specific studies on the water resources of this State.

Our water resources in North Carolina are generally abundant, but vary considerably as to distribution in time and space. We have experienced frequent periods of excess and drought. There is a lack of harmony between the location of population centers and the available water resource. And, of course, there is the deepening problem of water pollution.

The University has much to contribute to the proper management of our priceless water resources through research, extension and education. This service function has been reemphasized through the establishment of the Water Resources Research Institute.

This Institute is bringing the immense scientific capabilities of the University community to bear on North Carolina's water problems in the critical areas of water reserve planning, water supply and management, and water pollution control.

This is a cooperative program which involves a wide range of scientific disciplines in many departments at four different institutions. Steps are now being taken to strengthen information dissemination services to assure that North Carolina's water agencies, local governments, and industries have prompt access to research results in a form of maximum usefulness.

A specific example of the work of the Institute is the detailed and painstaking study, including the use of analogue computers and mathematical modeling, to determine the behavior of ground water in Pamlico and Beaufort counties.

The question is, "To what extent does the present method of mining the phosphate deposits in that area impair the value, the accessibility, and the very existence of the high quality of water which lies below the ground of that area?"

As the Governor of this State must face such questions determining the mechanisms of administration needed, the type of law which should be asked of the General Assembly,

and the policies to be pursued for the development of our State, I am comforted that there are skilled scientists seeking facts on the hidden movements of an important resource, our groundwater.

As chairman of the Board of Trustees of the Consolidated University, I am proud that we have this Institute for mobilizing the skills of our faculties and our students. We take pride in the fact that the Institute was recently singled out from among those of the 50 states for special recognition and commendation by the President of the United States.

For many years the Institute of Government has had a large commitment in the environmental field through its teaching, training, research and consulting programs.

Institute faculty resources in this field include specialists in natural resource law and administration, public health law, fish and game law, land use law and planning, and public utility management. They serve in this field and others as a bridge between the University and the State, both through on-campus teaching and research and off-campus assistance to the state and local governments.

The Institute is best known for its off-campus work, especially in environmental legislation. The past two decades have seen great progress in constructive new legislation in North Carolina concerning natural resources and the environment. Among the landmark statutes enacted during this period were:

1. The State Stream Sanitation Act (1951), substantially modernized as a vehicle for water pollution control in 1967 and liberalized by the research-scientific classification amendment of 1969.
2. The small watershed enabling act of 1959.
3. The Department of Water Resources Act of 1959 and its successor, the Department of Water and Air Resources Act of 1967.
4. A substantial body of seashore and sand dune protection laws (1967).
5. A comprehensive air pollution control law (1967).
6. The Capacity Use Areas Law (1967), our first significant water use regulation law.
7. The Dam Safety Act (1967), providing for safety and low flow control features in dams.
8. A comprehensive set of laws to protect and preserve our estuaries (1969).

In almost every instance involving these and many other natural resource laws, the Institute of Government has made the background studies, helped negotiate agreement among conflicting interests, and drafted the bills that embody these measures.

The Carolina Population Center of the University of North Carolina at Chapel Hill supports and coordinates a comprehensive program of research, education and service in the field of population dynamics and family planning.

This program is based at UNC-CH, but it also involves concerned faculty members from Duke University and North Carolina State University and staff members from the Research Triangle Institute.

The Carolina Population Center maintains close relationships with related agencies and institutions in the State, the Southeast, the nation and in selected areas abroad.

The Center for Acoustical Studies, headquartered at North Carolina State University, is one of the major centers in the world for noise pollution studies.

This center includes scientists from N. C. State, Duke, and the University of North Carolina at Chapel Hill. It is funded by the National Aeronautics and Space Administration.

REORGANIZATION OF STATE GOVERNMENT

In State Government, there are more than 18 different agencies and commissions working on environmental problems.

Unfortunately, these agencies do not coordinate their activities as well as they should. Each is involved in a different aspect of the total problem, and there is no office which provides guidance and direction for all of our work. Nor is there a central office which ensures that duplication or neglect of duties do not occur.

The objective of the proposed reorganization of State Government is to consolidate the 317 agencies, boards and commissions that we now have into no more than 25 agencies, organized along functional lines.

One possible agency, or department, may be a Department of Natural Resources or a Department of Environmental Affairs.

Such a department, guided by a director and a planning staff, would contain most, if not all, of those groups which are now working separately.

This reorganization, if it is achieved, should result in a great deal more efficiency and effectiveness than we have at this time.

CONCLUSION

The environmental problem is a complex one. It involves air, water, soil and noise pollution. It involves junk cars and littered streets. It involves legal questions, population patterns, land use questions. It involves technology and a great deal of money.

There is no doubt in my mind that every man, woman and child in this country will have to pay the costs to improve our environment. These costs will be high. But I believe our people and our economy can bear these costs.

As long as there are people around, there will be some pollution. We cannot eliminate pollution. But we can and should try to control pollution and to reduce it as much as possible.

As we plan and prepare for the advent of a new century, less than 30 years away, I suggest that we ask ourselves if what we do today will be good for our children and our grandchildren tomorrow.

I want these future generations to say that we planned well and that we acted wisely. There is no better legacy we can leave them.

As we begin the decade of the Seventies, let us have a commitment to solve the problems of our environment, a commitment on the part of industry, educators, housewives, school children, conservationists and developers.

We must have such a commitment if we expect the dawn of the 21st Century to be a bright one.

This commitment must begin in the minds of each individual.

My administration will provide leadership to give direction and meaning to this commitment.

